

NATIONAL AVIATION WEATHER PROGRAM COUNCIL

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NATIONAL AVIATION WEATHER INITIATIVES

Prepared by the Joint Action Group for Aviation Weather

for the

National Aviation Weather Program Council

Office of the Federal Coordinator for Meteorology

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FOREWORD

We are pleased to release the *National Aviation Weather Initiatives* prepared by the Joint Action Group of the National Aviation Weather Program Council. Following release of the *National Aviation Weather Strategic Plan*, the Joint Action Group was directed to take the next step and prepare a document which identifies initiatives for implementation in support of the vision and elements of the *Strategic Plan*. This has been accomplished and the Joint Action Group, under the leadership of the Aviation Weather Directorate of the Federal Aviation Administration, is to be commended on a job well done.

Drafting the *National Aviation Weather Initiatives* represents intense cooperation and coordination involving not only those in the federal government but also those in the aviation industry who played an active role in reviewing the document. Many of the initiatives contained in this document come from the aviation industry and reflect their needs and concerns in making the aviation weather system better for the 21st century.

The National Aviation Weather Program Council members whose signatures appear below are committed to these initiatives and will work toward their implementation through agency programs. We believe that the *National Aviation Weather Initiatives* sets the tone and direction for the type of aviation weather support which will promote safe and efficient flight within the National Airspace System by reducing the impacts of adverse weather.

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TABLE OF CONTENTS

FOREWORD	iii
TABLE OF CONTENTS	v
EXECUTIVE SUMMARY	vii
CHAPTER 1 INTRODUCTION	1-1
CHAPTER 2 METHOD	2-1
CHAPTER 3 CEILING AND VISIBILITY	3-1
CHAPTER 4 CONVECTIVE HAZARDS	4-1
CHAPTER 5 EN ROUTE WINDS AND TEMPERATURES	5-1
CHAPTER 6 GROUND DE-ICING AND ANTI-ICING	6-1
CHAPTER 7 IN-FLIGHT ICING	7-1
CHAPTER 8 TERMINAL WIND AND TEMPERATURE HAZARDS	8-1
CHAPTER 9 TURBULENCE	9-1
CHAPTER 10 VOLCANIC ASH AND OTHER AIRBORNE HAZARDOUS MATERIALS	10-1
CHAPTER 11 CONCLUSION	11-1
APPENDIX A ORGANIZATIONAL ABBREVIATIONS	A-1

National Aviation Weather Initiatives

Executive Summary

The safe and efficient operation of the National Airspace System is a national priority. In 1997 the White House Commission on Aviation Safety and Security called for an 80% reduction in the rate of fatal aviation accidents by the year 2007. That goal has been adopted by both FAA and NASA in their strategic plans, and NASA has set a 25 year goal as well. Weather is a factor in roughly 23% of all aviation accidents and annually costs the country an estimated \$3 billion for accident damage and injuries, delays, and unexpected operating costs. FAA's Safer Skies Safety Agenda has identified weather as a major cause of both commercial and general aviation accidents, and is evaluating and addressing the cause of such accidents. Reducing the number of weather-related accidents would be a significant step in achieving the overall goal of accident reduction and would result in major cost savings as well.

This document represents the combined efforts of an interagency panel of aviation weather experts as well as those in the aviation community seeking to identify improvements and modifications in the current infrastructure that will lead to vital reductions in the rate of weather-related accidents. The document builds upon the approach taken in its predecessor, the *National Aviation Weather Program Strategic Plan*. The focus is on operational aspects of aviation weather; it is guided by aviation weather user inputs (FAA User Forums and industry review) and by earlier documents issued by the FAA and the National Research Council.

The *Strategic Plan*, published in 1997, focused on four distinct, but complementary, elements. This *Initiatives* document has added a fifth element. Taken together, these elements form the basic operational objectives for the initiatives recommended in this document. These objectives are:

- provide improved aviation weather information,
- enhance the ability of decision makers to use the information,
- improve the capabilities of aircraft to fly safely and efficiently in all types of weather (*added in this document*),
- facilitate improvements by forging the required institutional arrangements, and
- direct and utilize research related to aviation weather.

The purpose of the document is to:

- provide a basis for agencies to leverage their resources,
- focus the efforts of all stakeholder agencies on the same set of priorities,
- engage industry and research organizations to review, provide feedback, and assist in setting future priorities for activities relating to aviation weather, and
- serve as a foundation for follow-on detailed plans.

The method for arriving at recommended initiatives was to examine specific weather-related service areas in light of the operational objectives stated above. The service areas are:

- Ceiling and Visibility
- En Route Winds and Temperatures
- In-flight Icing
- Turbulence
- Convective Hazards
- Ground Deicing
- Terminal Winds and Temperatures
- Volcanic Ash and Other Airborne Hazardous Materials

In considering each service area, a large number of possible initiatives were considered. Those which showed the most promise were subjected to a qualitative cost/benefit analysis which took into account:

- Benefits
 - Safety (contribution to reducing accidents and fatalities/injuries)
 - Delay reduction
 - Cost avoidance (government and industry)
- Costs
 - Technical and schedule risks
 - Scope of the effort required
 - Government infrastructure impact
 - Industry cost

A total of 86 individual initiatives were identified. Each was given a relative ranking in its service area based on its perceived cost/benefit ratio. Although initiatives were only included if their implementation would lead to significant improvements in aviation weather services, 33 of them stood out as having particularly high benefits for safety and efficiency with relatively low costs.

Using the service area approach showed that many initiatives were common to more than one area, leading to a multiplier effect. Improvements in one area could be leveraged at little additional cost to produce similar improvements in other areas. Detailed analysis of the initiatives that crossed many areas led to identification of a smaller number of high impact initiatives which could be phrased in terms of specific operational improvements, irrespective of service area. These are:

- Implement **Flight Information Service (FIS)**¹ capabilities between the ground and the cockpit.
- Develop and implement **multifunctional color cockpit displays** incorporating FIS products.
- Expand and institutionalize the generation, dissemination, and use of **automated PIREPs** (pilot reports), including type of observation, to the full spectrum of the aviation community, including general aviation.
- Improve underlying **weather forecasting services** across all service areas.
- Require, develop, and implement aviation weather-related **training** packages for ATC service providers, pilots, and other users.
- Improve **aviation weather telecommunications capabilities** for ground-to-ground

¹ Aviation information specifically for weather, Notices To Airmen, and Special Use Airspace.

dissemination of aviation weather products, including bulk weather data distribution.

- Establish **objective standards** for characterizing various weather phenomena for national and international use.

This document is a critical step in developing improved aviation weather services. It draws on user inputs from throughout the aviation industry and identifies a small number of achievable, high impact initiatives which can be used as a common set of priorities for agency budgetary and operational planning. These initiatives can also provide common ground for continued and enhanced mutually beneficial cooperation among government, industry, and research organizations, with the intent of making the operation of the National Airspace System safer and more efficient. Through the use of government-industry teams and under the oversight of the National Aviation Weather Program Council, the initiatives in this document will serve as direction for follow-on service area design and program development.

